

Application No. 10/716,429  
Reply to Office Action of July 2, 2007

IN THE DRAWINGS

The attached sheet of drawings includes changes to Figs. 8A and 8B. This sheet, which includes Figs. 8A and 8B, replaces the original sheet including Figs. 8A and 8B.

Attachment: Replacement Sheet

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-20 are pending in the present application. Claims 1-3, 13 and 15-20 are amended by the present response. Support for amendments and additions to the claims can be found in the claims as originally filed. Thus, no new matter is added.

In the outstanding Office Action, the drawings were objected to under 37 C.F.R. §1.121(d); the information disclosure statements of 4/16/04, 2/4/05 and 2/20/04 were objected to as including informalities; Claims 1-3, 13, 15-17 and 19 were objected to as including informalities; Claims 1-3, 13, 15-17 and 19 were rejected under 35 U.S.C. §101, as non-statutory; Claims 1-20 were rejected under 35 U.S.C. §103(a) as unpatentable over Venkatesan et al. (U.S. Pat. No. 7,095,873, herein “Venkatesan”) in view of Kamijoh et al. (U.S. Pat. No. 7,046,817, herein “Kamijoh”).

With respect to the objection to the drawings, Figures 8A and 8B have been modified to include a legend. Accordingly, Applicants respectfully request that the objection to the drawings under 37 C.F.R. §1.121(d), be withdrawn.

With respect to the objection to the information disclosure statements, Applicants respectfully traverse this objection. Specifically, with respect to the information disclosure statements of 2/4/2005 and 2/20/2004, Applicants respectfully submit that the Lists of Related Cases filed 2/4/2005 and 2/20/2004 are proper as these filings are in keeping with the requirements of Patent Rule §1.98. Specifically, these IDS filings meet all the requirements of §1.98 as to providing a list of pending patent applications including a place next to each related case listed for the Examiner to initial. There is no requirement in 37 C.F.R. §1.98 that a Form 1449 must be used to list related applications. In addition, with respect to the information disclosure statement filed 4/16/2004, Applicants note that a statement of

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relevancy was filed with the reference on April 16, 2007. MPEP §609.04(a)(III) clearly states that a statement of relevancy is sufficient in place of a full English translation of the reference. Further MPEP §609.04(a)(III) states

Each information disclosure statement must further include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information listed that is not in the English language. *The concise explanation may be either separate from the specification or part of the specification.* If the concise explanation is part of the specification, the IDS listing should include the page(s) or line(s) numbers where the concise explanation is located in the specification. (emphasis added).

In the present case, the reference found in the IDS of 4/16/2004 is described on pages 4 and 5 of the present disclosure.

Accordingly, in light of the above discussion, Applicants respectfully request that the objection to the information disclosure statements of 2/4/2005, 2/20/2004 and 4/16/2004, be withdrawn.

With respect to the objection to Claims 1-3, 13, 15-17 and 19 as including informalities, Applicants note that Claims 1-3, 13, 15-17 and 19 have been amended to overcome the objection. Accordingly, Applicants respectfully request that the objection to Claims 1-3, 13, 15-17 and 19, be withdrawn.

With respect to the rejection of Claims 15-17 and 19 under 35 U.S.C. §101, as non-statutory subject matter, Applicants note that Claims 15-17 and 19 have been amended to recite a “computer readable medium.” Accordingly, Applicants respectfully request that the rejection of Claims 15-17 and 19 be withdrawn.

With respect to the rejection of Claims 1-3 and 13 under 35 U.S.C. §101, as non-statutory, Applicants respectfully traverse this rejection. Specifically, as acknowledged by the outstanding Action of page 3, Claims 1-3 and 13 recite an apparatus. An apparatus is clearly one of the enumerated categories of invention found in §101, i.e. an apparatus is a machine.

Clearly the “modules” noted by the outstanding Action in page 3 are parts of the machine.

Each of these parts is configured to conduct some action. It is irrelevant whether or not these parts of the machine are operated using software or not. Specifically, MPEP § 2106.01 states:

Computer programs are often recited as part of a claim. USPTO personnel should determine whether the computer program is being claimed as part of an otherwise statutory manufacture or machine. In such a case, the claim remains statutory irrespective of the fact that a computer program is included in the claim. (emphasis added).

In the present case, each of the claims in question is directed to a statutory apparatus.

Accordingly, Applicants respectfully submit that the rejection of Claims 1-3 and 13 is improper and Applicants respectfully request that the rejection under §101 be withdrawn.

Addressing now the rejection of Claims 1-20 under 35 U.S.C. §103(a) as unpatentable over Venkatesan in view of Kamijoh, this rejection is respectfully traversed.

Claim 1 recites, in part,

a digital watermarking unit configured to adjust an ON/OFF state of significant bits such that the relation between information defined by N (N is an even number) significant bits  $Q_{nm}(x, y)$  ( $x=0, 1, \dots, y=0, 1, \dots$ ) of the  $m^{\text{th}}$  bit plane of the  $n^{\text{th}}$  block and a natural number T satisfies either the ON state expressed by equation (1), or the OFF state expressed by equation (2), depending on whether the encoding hash value of the  $n^{\text{th}}$  block is odd or even, in order to embed a digital watermark; and

an encoding unit configured to encode the set of quantized coefficients containing the ON/OFF adjusted significant bits,  
wherein equation (1) is

$$\left| \sum_{k=1}^{\frac{1}{2}N} Q_{nm}(ik, jk) \right| - \left| \sum_{k=\frac{1}{2}N+1}^N Q_{nm}(ik, jk) \right| > T, \text{ and}$$

wherein equation (2) is

$$\left| \sum_{k=\frac{1}{2}N+1}^N Q_{nm}(ik, jk) \right| - \left| \sum_{k=1}^{\frac{1}{2}N} Q_{nm}(ik, jk) \right| > T.$$

Claim 15 recites similar features and Claims 2, 3, 13, 16, 17 and 19 recite similar features but include different equations, e.g. equations (3), (4), (5), (6), (7) and (8).

Venkatesan describes a technology for facilitating watermarking in images using semi-global characteristics.

The outstanding Action acknowledges throughout the outstanding Action that Venkatesan does not describe or suggest the digital watermarking unit recited in Claims 1-3, 13, 15-17 and 19. However, the outstanding Action relies on Kamijoh as describing this feature.

Kamijoh describes an image processing method in which quantized values changed by errors introduced through a predetermined process (such as image type conversion i.e. jpeg → bmp) are corrected.

For instance, Figure 11 of Kamijoh shows the process flow of the method described in Col. 1, line 27 to Col. 2, lines 50 and illustrated in Figure 5. When an image is input into the system, a format identifier 320 is used to determine the format of the image. Based on the type of image input, whether it is a BMP, YUV or JPEG image, the system performs different conversion processes. If the image is a JPEG image, DCT coefficients are produced in step 322. The JPEG/BMP converter 326 performs an inverse DCT (iDCT) transformation for the DCT coefficients so that an overflow/underflow process can be performed. The BMP/JPEG' converter 330 performs a DCT transformation for the BMP and generates DCT JPEG' coefficients. However, as a result of the processes in the above steps, error is introduced into the quantized values generated in the DCT transformation. Accordingly, the DCT element adjuster 332 updates the coefficients that do not meet an error threshold. When the coefficient in question has error greater than the error threshold, then DCT coefficient adjustment portion 332 adjusts the value of the coefficient in question, which is received from the BMP/JPEG'

converter 330 so that the target DCT coefficient in question is stabilized. This is adjustment process is performed for each coefficient that has error above a certain threshold.

Clearly this process is not equivalent to the adjustment of an ON/OFF state of significant bits such that the relation between information defined by N (N is an even number) significant bits  $Q_{nm}(x, y)$  ( $x=0, 1, \dots, y=0, 1, \dots$ ) of the  $m^{\text{th}}$  bit plane of the  $n^{\text{th}}$  block and a natural number T satisfies either the ON state expressed by equation (1), or the OFF state expressed by equation (2), depending on whether the encoding hash value of the  $n^{\text{th}}$  block is odd or even, in order to embed a digital watermark, as recited in Claim 1.

For instance, in Kamijoh there is no description or suggestion that the on/off states of significant bits are adjusted. In addition, the adjustment system of Kamijoh does not in any way rely on whether the encoding hash value of the  $n^{\text{th}}$  block is odd or even. Clearly it can be easily seen from Figure 11 that any hash calculation is accomplished after all error in the coefficients has been corrected by the adjuster element 332.

In addition, the outstanding Action appears to rely on the fact that Kamijoh states that the object of the invention is to ensure that embedded verification information is not lost in the quantization process. However, this object is irrelevant to the claimed invention which describes a watermarking unit that watermarks the image in question by modifying the quantization values based on two different equations that are selected based on whether the encoding hash value of the  $n^{\text{th}}$  block is odd or even.

In addition, the Kamijoh reference does not describe or suggest any of the equations (1)-(8). These equations are simply not described anywhere in the Kamijoh reference.

Thus, Applicants respectfully submit that Claims 1 and 15 and similarly Claims 2, 3, 13, 16, 17 and 19, and claims depending therefrom, patentably distinguish over Venkatesan and Kamijoh considered individually or in combination.

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Accordingly, in light of the above discussion, Applicants respectfully request that the rejection of Claims 1-20 under Venkatesan and Kamijoh, be withdrawn.

Consequently, in light of the above discussion and in view of the present amendment the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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